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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,865	04/02/2004	Toshikazu Oshidari	023971-0392	9859

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EXAMINER

MULLINS, BURTON S

ART UNIT	PAPER NUMBER
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2834

DATE MAILED: 03/31/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/815,865

Applicant(s)

OSHIDARI ET AL.

Examiner

Burton S. Mullins

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 3 is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
2. Claims 1-2, 5-8, 11-12 and 14-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakano (US 6,114,784) in view of Muramatsu et al. (JP 11-346446). Nakano teaches a stator for use in a two rotor single stator type electric motor in which inner and outer rotors 10/30 are adapted to rotated independently with respect to each other within and around an axis of the stator 20 upon application of electric power to the stator, the stator comprising: a stator core including a plurality of stator teeth that are independent with respect to each other and circumferentially arranged around a common axis, each stator tooth including a plurality of flat magnetic steel plates 21 that are aligned along the common axis (Figs.2&7) while contacting one another (c.2, lines 36-39). Nakano further teaches two bracket members 44/45 between which the stator core 21 is sandwiched with connecting members (bolts) 43 (Fig.2) to fasten the sandwiched stator core within the two brackets 44/45 (Fig.2, c.3, lines 33-44).

Nakano does not teach “at least one connecting ring plate coaxially installed in the stator core in such a manner that the ring plate is put between adjacent two of the flat magnetic steel plates of each stator tooth while contacting both of the flat magnetic steel plates, the ring plate being of an endless annular member and having a thickness that is smaller than an axial length of the stator.”

Muramatsu teaches a stator core assembly comprising a plurality of stator teeth laminations 80 connected by endless annular members forming connecting ring plates 81 (Fig.1,

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abstract) which are put between adjacent two flat stator teeth laminations 80 so as to contact on either side a flat stator lamination 80 (Figs.1-2). The ring plates eliminate leakage flux (abstract).

It would have been obvious to modify Nakano and provide at least one connecting ring plate per Muramatsu since this would have eliminated leakage flux.

Regarding claim 2, as seen in Muramatsu Fig.3, the ring plate 81 comprises an annular inner portion and a plurality of finger portions extending radially outward therefrom.

Regarding claim 5, Muramatsu's plates 81 are nonmagnetic (abstract).

Regarding claims 6-8, Muramatsu's teeth each comprise a generally rectangular cross section (Fig.2) and have a taper (Fig.9) and an auxiliary member G between the teeth (Fig.4).

Regarding claim 11, the connecting ring plates 81 formed by Muramatsu would inherently comprise a means "adapted to suppress deformation or inclination of the stator teeth, when a torque is applied to the stator" due to the endless annular structure of Muramatsu's ring plates 81 (Fig.3), and further because each connecting ring plate 81 contacts flat magnetic steel plates 80 on either side and because the ring plates 81 include bridging portions 810 which suppress deformation and inclination of the entire stator structure.

Regarding claims 12 and 14, Muramatsu teaches at least two connecting ring plates 81, wherein at least some of the flat magnetic steel plates 80 are held between the two connecting ring plates. In combination with Nakano's bolts and brackets, Muramatsu's ring plates hold the laminations only by compression forces acting through the ring plates.

Regarding claim 15, Nakano teaches plural stator teeth 21a independent with respect to one another (Fig.7). In Muramatsu, at least one connecting ring plate 81 coaxially installed in

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the stator core is installed in such a manner that the ring plate 81 is put between adjacent two of the flat magnetic steel plates 80 of each stator tooth while contacting both of the flat magnetic steel plates 80 (Figs.1&2).

3. Claims 1, 4, 8-9, 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakano (US 6,114,784) in view of Itoh et al. (US 6,225,725). As described above, Nakano substantially teaches applicant's invention but does not teach "at least one connecting ring plate coaxially installed in the stator core in such a manner that the ring plate is put between adjacent two of the flat magnetic steel plates of each stator tooth while contacting both of the flat magnetic steel plates, the ring plate being of an endless annular member and having a thickness that is smaller than an axial length of the stator."

Itoh teaches a stator core construction (second embodiment, Figs. 10-11, c.4, lines 28-58) comprising plural flat pole piece laminations 34 with connecting ring plates comprising iron core blanks 50 of magnetic steel (c.6, lines 20-25) in intimate contact with and between two of the flat laminations 34 (Figs.10-11) and having a thickness that is smaller than an axial length of the stator (Fig.11). In the second embodiment, the bridges 55 of the iron core blanks/connecting ring plates 50 are not cut and thus the ring plates remain intact and form endless annular members (c.4, lines 31-33). The iron core blanks/connecting ring plates 50 provide improved manufacturing (c.5, lines 5-13) and increased structural stability of the stator (c.4, line 66-c.5, line 4).

It would have been obvious to modify Nakano and provide connecting ring plates per Itoh to improve manufacture and structural stability of the stator.

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Regarding claims 8-9, note Itoh's teeth 34 with auxiliary stator member at the radially leading end thereof (Fig.8b) and non-magnetic, connecting metal (brass) member 38 between adjacent teeth for reducing displacement (c.6, lines 10-18).

Regarding claim 11, Itoh's iron core blanks/connecting ring plates 50 inherently comprise means "adapted to suppress deformation or inclination of the stator teeth, when a torque is applied to the stator" due to the endless annular structure of Itoh's ring plates 50 (Fig.2), and further because each connecting ring plate 50 contacts flat magnetic steel plates 34 on either side (Fig.11) and because the ring plates 50 include (uncut) bridging portions 55 which suppress deformation and inclination of the entire stator structure.

Regarding claim 15, Nakano teaches plural stator teeth 21a independent with respect to one another (Fig.7). In Itoh, the at least one connecting ring plate 50 (Fig.11) is coaxially installed in the stator core in such a manner that the ring plate 50 is put between adjacent two of the flat magnetic steel plates 34 of each stator tooth while contacting both of the flat magnetic steel plates 34 (Fig.11).

4. Claims 10, 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakano (US 6,114,784) in view of Muramatsu et al. (JP 11-346446) and Kurosawa et al. (US 6,043,583). Nakano teaches a stator for use in a two rotor single stator type electric motor in which inner and outer rotors 10/30 are rotated independently with respect to each other within and around the stator 20 upon application of current to the stator, the stator comprising: a stator core including a plurality of stator teeth that are independent with respect to each other and circumferentially arranged around a common axis, each stator tooth including a plurality of flat magnetic steel plates 21 that are aligned along the common axis (Figs.2&7) while contacting one

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another (c.2, lines 36-39). Nakano further teaches plural coils 15 around the stator teeth and two supporting brackets 44/45 between which the stator teeth are sandwiched with fastening members (bolts) 43 (Fig.2) that fasten the two supporting brackets 44/45 to tightly connect the magnetic steel plates 21 of each stator tooth to one another, thereby fastening the sandwiched stator core within the two brackets 44/45 (Fig.2, c.3, lines 33-44).

Nakano does not teach: 1) “at least one connecting ring plate coaxially installed in the stator core in such a manner that the ring plate is put between adjacent two of the flat magnetic steel plates of each stator tooth, the ring plate being of an endless annular member and having a thickness that is smaller than an axial length of the stator”; or 2) “a molded plastic that embeds therein the stator, the connecting ring plate, the coils, the two supporting brackets and the fastening members thereby to constitute a cylindrical structure”.

Regarding (1), Muramatsu teaches a stator core assembly comprising a plurality of stator teeth laminations 80 connected by endless annular members forming connecting ring plates 81 (Fig.1, abstract) which are put between adjacent two flat stator teeth laminations 80 so as to contact on either side a flat stator lamination 80 (Figs.1-2). Each connecting ring plate 81 comprises an endless annular member (Fig.3) and has a thickness that is smaller than an axial length of the stator, as seen in Fig.1. The connecting ring plates eliminate leakage flux (abstract).

Regarding (2), Kurosawa teaches a laminate stator core comprising stacked sheet members 1 and a molding comprising a synthetic resin layer which surrounds the stator core structure (Figs.1&2). The resin mold keeps the lamination sheets in contact with each other and maintains their accuracy and durability (c.2, lines 20-26).

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It would have been obvious to modify Nakano and provide at least one connecting ring plate per Muramatsu since this would have eliminated leakage flux; and further more to mold plastic and embed the stator/ringplate/coil/bracket/fastener structure of Nakano/Muramatsu per Kurosawa since molding would have been desirable to keep the lamination sheets in contact and improve accuracy and durability.

Regarding claim 13, Muramatsu teaches at least two connecting ring plates 81, wherein at least some of the flat magnetic steel plates 80 are held between the two connecting ring plates. In combination with Nakano's bolts and brackets, Muramatsu's ring plates hold the laminations only by compression forces acting through the ring plates.

Regarding claim 16, Nakano teaches plural stator teeth 21a independent with respect to one another (Fig.7). In Muramatsu, at least one connecting ring plate 81 coaxially installed in the stator core is installed in such a manner that the ring plate 81 is put between adjacent two of the flat magnetic steel plates 80 of each stator tooth while contacting both of the flat magnetic steel plates 80 (Figs.1&2).

Allowable Subject Matter

5. Claim 3 is allowed. Applicant incorporated the indicated allowable subject matter of at least one connecting ring plate comprising an annular outer base portion and a plurality of finger portions that radially extend inward from the annular outer base portion, as shown in Fig.8.

Response to Arguments

6. Applicant's arguments filed 22 February 2006 have been fully considered but they are not persuasive.

7. Regarding the rejection of claims 1-2 and 5-8 over Nakano and Muramatsu, applicant argues that there is no motivation to combine Muramatsu with Nakano. The examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Muramatsu clearly teaches the ring plates eliminate leakage flux. There is no requirement that the base reference to Nakano teach or imply that his machine suffers from leakage flux. Leakage flux is inherent to any dynamo-electric machine and contributes to the system's entropy. In response to applicant's argument that there is no evidence of success, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

In response to applicant's argument that Muramatsu's single-rotor/single-stator motor is nonanalogous art and cannot be applied to Nakano's dual-rotor/single stator machine, it has been held that a prior art reference must either be in the field of applicant's endeavor or, if not, then be

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reasonably pertinent to the particular problem with which the applicant was concerned, in order to be relied upon as a basis for rejection of the claimed invention. See *In re Oetiker*, 977 F.2d 1443, 24 USPQ2d 1443 (Fed. Cir. 1992). In this case, both references share the general field of electric motors, and in particular laminated stator construction therefore.

In response to applicant's argument that his connecting rings were designed to provide stator teeth with rigidity rather than a reduction of leakage flux as taught in Muramatsu, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Regarding applicant's argument that Muramatsu's stator teeth 80 are not independent from one another, since this recitation is not in the claims, the argument carries little weight.

8. Regarding the rejection of claims 1, 4, 8 and 9 over Nakano and Itoh, applicant argues that Itoh's ring 50 is "broken up" to form separate elements. While this may be true for the first embodiment, applicant ignores a second embodiment wherein the bridge portions 55 are not broken and the iron cores 50 remain intact as endless rings, as shown in Figs.10-11. See c.4, lines 28-58 and c.7, lines 17-47. Regarding applicant's argument that there is little motivation to combine Itoh with Nakano, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Itoh clearly teaches that the iron core

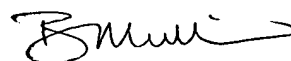
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blanks/connecting ring plates 50 provide improved manufacturing (c.5, lines 5-13) and increased structural stability of the stator (c.4, line 66-c.5, line 4).

9. Regarding applicant's argument that the combination of Nakano, Muramatsu and Kurosawa would not have been obvious, applicant presents no new arguments but instead relies only on arguments concerning the combination of Nakano and Muramatsu which are treated above.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Burton S. Mullins whose telephone number is 571-272-2029. The examiner can normally be reached on Monday-Friday, 9 am to 5 pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Burton S. Mullins
Primary Examiner
Art Unit 2834

bsm
29 March 2006